

CLAIMS

What is claimed is:

- 1 1. A method of generating contour lines from row and column
2 data, the method comprising the steps of:
 - 3 a) selecting a first data point from the row and column data
4 comprising a first state;
 - 5 b) comparing a second data point with the first state;
 - 6 c) determining an existence of a contour line;
 - 7 d) updating the first state to a next state, if the contour line
8 exists;
 - 9 e) creating a portion of a contour line image, if the contour
10 line exists;
 - 11 f) proceeding to a next data point; and
 - 12 g) repeating steps b) through g) for a next column or row.
- 1 2. The method of claim 1 wherein the step of proceeding
2 comprises proceeding in a predetermined direction.
- 1 3. The invention of claim 2 wherein the step of proceeding in a
2 predetermined direction comprises proceeding in predetermined row and
3 column directions.
- 1 4. The method of claim 1 further comprising the step of selecting
2 a contour line interval.
- 1 5. The method of claim 1 further comprising anti-aliasing the
2 contour line image.
- 1 6. The method of claim 1 wherein the step of updating comprises
2 determining if an elevation point row and column data exceeds a current row
3 or column base elevation by a value greater than a contour interval.

1 7. The method of wherein the step of updating comprises storing
2 the next state in a memory.

1 8. The method of claim 7 wherein the step of storing comprises
2 storing the row and column base elevation.

1 9. The method of claim 1 wherein the step of creating comprises
2 drawing the portion of the contour line image.

1 10. The method of claim 9 wherein the step of drawing comprises
2 displaying the portion of the contour line image.

1 11. The method of claim 1 wherein the state of creating and the
2 step of repeating comprises creating an entire contour line image.

1 12. A method of transforming input elevation data into a real-time
2 contour plot image, the method comprising the steps of:
3 a) selecting an ordering sequence;
4 b) selecting a contour line interval;
5 c) determining initial row and column base elevation
6 values;
7 d) selecting a first data point;
8 e) determining whether a contour line point has been
9 detected by comparing the row base elevation value or column base
10 elevation value plus the contour interval to the elevation data;
11 f) drawing a portion of a contour plot image;
12 g) updating the row and column elevation values to a
13 highest contour interval multiple less than a elevation data point;
14 h) moving to a next data point; and
15 i) repeating steps e) through h).

1 13. The method of claim 12 wherein the step of determining initial
2 row and column base elevation values comprises selecting a contour
3 elevation closest to but not exceeding the first elevation value in the row.

1 14. The method of claim 12 wherein the step of drawing and the
2 step of repeating comprises drawing an entire contour line image.

1 15. An apparatus for generating contour lines from row and column
2 data, the apparatus comprising:
3 a first data point from the row and column data
4 comprising a first state;
5 a means for comparing a second data point with the first
6 state;
7 a means for determining an existence of a contour line;
8 a means for updating the first state to a next state, if the
9 contour line exists;
10 a means for creating a portion of a contour line image, if
11 the contour line exists;
12 a next data point for comparing with the next state by
13 the means for comparing; and
14 a means for drawing an entire contour line image from a
15 plurality of portions of contour line images created by the means for creating.

1 16. The apparatus of claim 15 wherein said means for creating
2 comprises a display.

1 17. The apparatus of claim 15 further comprising memory for
2 storing the next state.

1 18. The apparatus of claim 15 further comprising a means for anti-
2 aliasing the entire contour line image.